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*Striæ acusticæ und untere Schleife.* DR. C. v. MONAKOW. Archiv für Psychiatrie. Bd. XXII, H. I. Taf. I and II.

The author opens this paper, which is written with his usual care and precision, by a historical sketch of the views held regarding the *striæ acusticæ*, in which he specially dwells on those results which associate the *striæ* with the *lemniscus*. Passing to his own previous experiments he brings forward the following as bearing on the discussion. Removal of the entire temporal lobe, including the auditory centre of Munk, gave (in dogs?) degeneration of both cells and fibres in the *corpus geniculatum int.* of the operated side. This observation has been recently verified on two human brains where there was a defect in the temporal lobe. Moreover, following this operation, there was an evident degeneration of fibres in the arm of the posterior *corpora bigemina* on the operated side. If the lenticular nucleus and the *amygdala* were not also injured by the operation, then the degeneration could not be followed further caudad. In cats and rabbits, at least, the *inferior lemniscus* (*untere Schleife*) remains quite normal, after removal of the temporal lobe. If, in a rabbit, the caudal portion of the internal capsule be cut through, the atrophy in the *corpus geniculatum internum* and the arm of the posterior *corpora bigemina* is even more extensive than after removal of the temporal lobe, and in addition the nucleus of the posterior *corpora bigemina* is somewhat reduced in size. Neither the *inferior lemniscus* nor the so-called auditory nuclei are at all affected by this operation. In one instance, v. Monakow removed the posterior *corpus bigeminum* of one side, from a rabbit, and found as a result atrophy in the arm of the *corpus* and the *inferior lemniscus*, and also some loss of fibres in the ventral decussation of the *tegmentum*. When, however, the *inferior lemniscus* is sectioned in a new-born cat, there degenerate among other things the *striæ acusticæ* and the *tuberculum acusticum* of the side opposite that of the lesion. This result on the cat was obtained some time since, but the author has delayed publication until he could verify his results in some other case. Recently, a repetition of the same operation on a dog has given him similar results and he now publishes the account of both together.

The operation consisted in both cases of cutting the *inferior lemniscus* on the right side and observing the degenerations which followed. The details of the results must be omitted here, but the general outcome may be stated as follows: In a section just caudad of the posterior *corpora bigemina* are to be seen nearly all the bundles of fibres belonging to the *lemniscus*. This last—the *lemniscus* of Forel—occupies that region between the *pons* and *formatio reticularis*, which lies laterad to the *raphe*. The lateral portion of the region so bounded consists of fibres which in a cross-section are cut through squarely or obliquely, and is called the *inferior lemniscus*, lying for the most part laterad to the *formatio reticularis*. In the cat, v. Monakow divides the *lemniscus* of Forel into a lateral and mesal portion, the dividing line running parallel to the *raphe*, and cutting the *lemniscus* midway between the *raphe* and the mesal edge of the middle peduncle of the cerebellum. In each of these subdivisions he further distinguishes a dorsal and a ventral portion, which latter, however, are only separable in animals that have been operated upon. Of this area about two thirds belong to the so-called cortical *lemniscus*—i. e., the fibres which degenerate upon removal of the parietal cortex, and they occupy the dorsal portion of both the mesal and lateral areas just mentioned. By "*inferior lemniscus*" v. Monakow designates the region between the ventral end of the superior cerebellar peduncle (*Bindearme*) and the gray matter of the *pons* and laterad to the *formatio reticularis*. In this region he marks off four areas, which he designates by A, B, C and D respectively: A, the central area, is the group of fibres which passes through and immediately

surrounds the lateral nucleus (Obersteiner) of the *lemniscus*. *B* is the ventral area which passes mesad into the so-called *lateral lemniscus* (v. Monakow's lateral division of the *lemniscus* of Forel). *C* is the dorsal area which occupies the space between the superior cerebellar peduncle and *A*. *D* is the mesal area of fibres, cut obliquely, which lies mesad of *A* and *B*, and is separated from them by a thin layer of gray matter.

Turning now to the results of the examination of the two animals experimented upon, they show that the dorsal area (*C*) when sectioned causes a degeneration of the dorsal fibres of the superior olive on the operated side, and of the arcuate fibres passing from this part of the superior olive to the dorsal surface of the other side. Since the fibres that take this course go directly to form the *stria acustica*, it is, therefore, the *stria acustica* which degenerate and in connection with them the large spindle-shaped cells lying in the dorsal portion of the *tuberculum acusticum*, so that this group of structures may be considered as physiologically associated. To this area (*C*) of the *inferior lemniscus* v. Monakow gives the designation of "Path of the *stria acustica*" (*Antheil der Stria Acustica*). It does not, however, contain *all* the fibres of the *stria*, since some escape degeneration. Cephalad of the point of the initial lesion there occurs a degeneration in the gray substance of the posterior *bigemina*. Since, therefore, there are two sets of cells involved, in the *tuberculum acusticum* at one end, and the *corpora bigemina* at the other, v. Monakow assumes that two sets of fibres, conducting in opposite directions, have here been sectioned. Considering further the reactions of the posterior *corpora bigemina* to lesions lying cephalad to them, as given in the first part of this review, and now the reaction to a lesion lying caudad, the author suggests that there may be in their gray matter predominantly cells of the second or central type (Golgi), and that they may thus form an intermediate centre between the *medulla* and the cortex.

Dependent on the *inferior lemniscus*, according to these experiments, are the lateral nucleus of the *lemniscus*, and in part the superior olive, both on the same side as the lesion—further, the fibres passing ventromesad from the side of the lesion, and taking part in the ventral decussation of the *tegmentum* and the dorsal fibres ( $H_2$ ) in the *regio subthalamica*, on the side opposite to the lesion. For the relations of these several degenerations to the areas of the *inferior lemniscus*, as above described, the reader is referred to the original.

V. Monakow's final statement with regard to the "Path of the *stria acustica*" is that he considers these fibres as a secondary tract of the *acusticus* passing cephalad from the *tuberculum acusticum*, and at least once interrupted on its way to the cortex, the point of interruption being probably the gray matter of the posterior *corpora bigemina*; but what the connection between this intermediate centre and the cortex may be, is by no means clear from the experimental evidence at present available. The paper closes with a condensed statement of the relation of the author's views on the subject of the *stria acustica* to those of Flechsig and Baginsky. [It will be remembered that in his study of the path of the optic impressions (see AM. JOURN. PSYCHOL., Vol. II, p. 625), v. Monakow suggested the same arrangements of double sets of fibres conducting in opposite directions, which he here believes to exist in the "Path of the *stria acustica*."—REV.]

*La psicologia in rapporto alle ultime nozioni di fisiologia del cervello.*  
L. BIANCHI. Estratto dagli Atti del IV Congresso tenutosi in Novara dall' 8 al 14 Settembre, 1889. Milano, 1890.

This paper is the report of an address given by Bianchi at the congress above mentioned, and is an example of the efforts now being made on many sides better to utilize the results of experimentation on the